Amendments to the Claims

1. (previously presented) A semiconductor bridge igniter comprising:

a substrate;

an electrical bridge structure disposed on the substrate, the bridge structure being configured to have a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section, the bridge structure consisting essentially of a layer of titanium disposed over a layer of semiconductor material having a negative coefficient of electrical conductivity at temperatures above ambient temperature; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.

2. (original) The semiconductor bridge igniter of claim 1 further comprising a pair of electrical leads, one connected to a respective one of the electrically conductive lands.

3. (original) The semiconductor bridge igniter of claim 2 further including a source of electrical energy connected to each of the electrical leads to define an electrical circuit extending from one lead, to one of the electrically conductive lands, through the bridge section, thence to the other electrically conductive land and the other electrical lead.

4. (original) The semiconductor bridge igniter of claim 3, wherein the source of electrical energy comprises a capacitor.

5. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the substrate comprises silicon having a silicon dioxide layer, and wherein the electrical bridge structure is disposed upon the silicon dioxide layer.

6. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the substrate comprises sapphire.

7. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the material having a negative coefficient of electrical conductivity comprises polysilicon.

8. (original) The semiconductor bridge igniter of claim 7 wherein the polysilicon is undoped.

9. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 wherein the material having a negative coefficient of electrical conductivity comprises crystalline silicon.

10. (original) The semiconductor bridge igniter of claim 9 wherein the crystalline silicon is undoped.

11. (original) The semiconductor bridge igniter of claim 1, claim 2 or claim 3 disposed in contact with an energetic material charge contained within the header of an igniter assembly.

12. (previously presented) A semiconductor bridge igniter comprising:

a substrate;

an electrical bridge structure disposed on the substrate, the bridge structure comprising a layer of a semiconductor material having a negative coefficient of electrical conductivity at temperatures above ambient temperature and having disposed thereover a layer of titanium, the titanium having been preconditioned to be stabilized against temperature-induced variations in resistance, the bridge structure comprising a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.

13. (previously presented) The semiconductor bridge igniter of claim 12 comprising titanium preconditioned by heating the igniter to an elevated temperature of from about 37°C to about 250°C.

14. (previously presented) The semiconductor bridge igniter of claim 12 comprising titanium preconditioned by heating the igniter to an elevated temperature of from about 100°C to 250°C.

15. (original) The semiconductor bridge igniter of claim 1, wherein said pair of electrically conductive lands comprises a metal.

16. (previously presented) The semiconductor bridge igniter of claim 15, wherein the electrically conductive lands comprise a metal selected from the group comprising aluminum, gold, silver, chromium, and combinations thereof.

17. (previously presented) The semiconductor bridge igniter of claim 12, claim 13 or claim 14 further comprising a pair of electrical leads, one connected to a respective one of the electrically conductive lands.

18. (previously presented) A semiconductor bridge igniter consisting essentially of:

a substrate;

an electrical bridge structure disposed on the substrate, the bridge structure being configured to have a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section, the bridge structure consisting essentially of a layer of titanium disposed over a layer of semiconductor material; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.

19. (previously presented) The semiconductor bridge igniter of claim 1, claim 12 or claim 18 wherein the semiconductor material has, at ambient temperatures, a greater resistivity than the layer of titanium and, at an elevated temperature lower then the melting point of the layer of titanium, a lesser resistivity than the layer of titanium.

20. (previously presented) The semiconductor bridge igniter of claim 19 further comprising a pair of electrical leads, one connected to a respective one of the electrically conductive lands.

21. (canceled)

22. (currently amended) ~~The method of claim 21 comprising~~ A method for initiating an energetic material using a semiconductor bridge igniter comprising a substrate, an electrical bridge structure disposed on the substrate, the bridge structure comprising a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section, the bridge section comprising a layer of a semiconductor material having a negative coefficient of electrical conductivity at temperatures above ambient temperature and having disposed thereover a layer of solid metal, and a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed;

the method comprising exposing the igniter to an energetic material and applying a voltage across the lands to generate ~~applying the voltage to generate~~ a current through the metal and thereby heat the solid metal and the semiconductor material thereunder to a temperature at which the semiconductor material has a lower resistance than the solid metal and then generating a current through the semiconductor material to heat the semiconductor material to temperatures sufficient to melt the solid metal before the semiconductor material vaporizes.

23. (currently amended) The method of ~~claim 21 or~~ claim 22 wherein the metal is reactive with oxygen.

24. (currently amended) The method of ~~claim 21 or~~ claim 22 wherein the metal consists essentially of titanium.